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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/554,882	05/22/2000	TAKEHARU ETOH	0020-4711P	9174

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BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER
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HERNANDEZ, NELSON D

ART UNIT	PAPER NUMBER
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2612

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DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/554,882

Applicant(s)

ETOH ET AL.

Examiner

Nelson D. Hernandez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 9/22/00, 7/25/00
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1,3,5-8 and 12-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-8 and 12-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 8 objected to because of the following informalities: claim 8 depends on canceled claim 4; claim will be read as depending to claim 6 for examining purposes. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3, 5, 7, 12, 13, 15, 24-26 and 28 rejected under 35 U.S.C. 102(e) as being anticipated by Etoh, US Patent 6157408.

Re claim 1, Etoh discloses a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein said electric signal recorders are linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading the electric signals out of a light perceptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Re claim 3, Etoh discloses connectors (Figs. 7: 31, 8: 31, 9: 31, 14: 31, 15: 31, 16: 31) for directly connecting the signal converters with the read-out lines without passing through the electric signal recorders by teaching a sensing/monitoring mode where signals are directly transmitted to a brightness monitoring means (Fig. 3: 13) via the signal discharge line (Fig. 3: 31) (Col. 19, line 44 – col.20, line 32).

Re claim 5, Etoh discloses that the electric signal recorder is a charge coupled device type electric signal recorders (Col. 4, lines 15-35).

Re claim 7, Etoh discloses that each of the signal converters is divided into a plurality of portions (Figs. 3, 7, 8 and 15) insulated from each other, (it is noted in figs. 3, 7, 8 and 15 that the plurality of portions are electrically insulated from each other connecting each portion to a different storage/read out line) (Col. 13, lines 37-58; col. 19, lines 10-24).

Re claim 12, Etoh discloses a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an intensity of electromagnetic waves or particle streams, and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein the electric signal recorders are linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading out the electric signals out of a light receptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Re claim 13, Etoh discloses that the electric signal recorder is a charge coupled device type electric signal recorders (Col. 4, lines 15-35).

Re claim 15, Etoh discloses that each of the signal converters is divided into a plurality of portions insulated from each other (it is noted in figs. 3, 7, 8 and 15 that the plurality of portions are electrically insulated from each other connecting each portion to a different storage/read out line) (Col. 13, lines 37-58; col. 19, lines 10-24).

Re claim 24, Etoh discloses a high speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein each of said signal converters is divided into a plurality of portions insulated from each other (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61; col. 13, lines 37-58; col. 19, lines 10-24).

Re claim 25, Etoh disclosed an image sensing apparatus (Fig. 1) comprising a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein said electric signal recorders is linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading out the electric signals out of a light perceptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Re claim 26, Etoh disclosed an image sensing apparatus (Fig. 1) comprising a high-speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an intensity of

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electromagnetic waves or particle streams, and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein the electric signal recorders are linear shaped and provided with a read-out line for each of longitudinal sections thereof, the read-out line being used for directly reading out the electric signals out of a light receptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Re claim 28, Etoh disclosed an image sensing apparatus (Fig. 1) comprising a high speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein each of said signal converters is divided into a plurality of portions insulated from each other (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61; col. 13, lines 37-58; col. 19, lines 10-24).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 18, 19, 21 and 27 rejected under 35 U.S.C. 103(a) as being obvious over Etoh, US Patent 6157408 in view of applicant's admitted prior art (fig. 24).

Re claim 18, Etoh discloses a high speed image sensor (Fig. 1: 2) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein said signal converters are disposed in all of square or rectangular frames in a light receptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Etoh does not explicitly disclose that a center line of each said electric signal recorder is inclined with respect to a line connecting two of the signal converter, adjacent to each other in an extension direction of the recorders, to corresponding electric signal recorders. However, Etoh teaches in fig. 20 one of the center lines of the recorders S1-S9 being obliquely slashed and placed. Also Etoh teaches one of the sections of the photoreceptive area having most of the center lines of the recorders obliquely slashed and placed (See bottom in fig. 19) (Col. 26, line 32 – col. 27, line 24).

Furthermore, fig. 24 in applicant's admitted prior art shows the center lines (10) being inclined with respect to a line connecting two of the signal converters (8), adjacent to each other in an extension direction of the recorders, to corresponding electric signals recorders.

Therefore, it would have been obvious to modify Etoh in view of the admitted prior art by placing each of the center lines obliquely slashed and placed. Doing so would help avoiding abrupt changes in direction, which the signal charges are being transferred so as to avoid signal deterioration.

Re claim 19, Etoh discloses that the electric signal recorder is a charge coupled device type electric signal recorders (Col. 4, lines 15-35).

Re claim 21, Etoh discloses that each of the signal converters is divided into a plurality of portions insulated from each other (it is noted in figs. 3, 7, 8 and 15 that the plurality of portions are electrically insulated from each other connecting each portion to a different storage/read out line) (Col. 13, lines 37-58; col. 19, lines 10-24).

Re claim 27, Etoh disclosed an image sensing apparatus (Fig. 1) comprising a plurality of signal converters (Figs. 1: 2, 3: 18 and 4: 23) for generating electric signals according to an incident light intensity and a plurality of electric signal recorders (25A – 25F in figs. 4, 7-10, 14 and 22) for storing electric signals output from corresponding signal converters, wherein said signal converters are disposed in all of square or rectangular frames in a light receptive area (Col. 8, lines 42-51; col. 9, lines 5-59, col. 12, lines 50-61).

Etoh does not explicitly disclose that a center line of each said electric signal recorder is inclined with respect to a line connecting two of the signal converter, adjacent to each other in an extension direction of the recorders, to corresponding electric signal recorders. However, Etoh teaches in fig. 20 one of the center lines of the recorders S1-S9 being obliquely slashed and placed. Also Etoh teaches one of the sections of the photoreceptive area having most of the center lines of the recorders obliquely slashed and placed (See bottom in fig. 19) (Col. 26, line 32 – col. 27, line 24).

Furthermore, fig. 24 in applicant's admitted prior art shows the center lines (10) being inclined with respect to a line connecting two of the signal converters (8), adjacent



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to each other in an extension direction of the recorders, to corresponding electric signals recorders.

Therefore, it would have been obvious to modify Etoh in view of the admitted prior art by placing each of the center lines obliquely slashed and placed. Doing so would help avoiding abrupt changes in direction, which the signal charges are being transferred so as to avoid signal deterioration.

6. Claims 6, 8, 14, 16, 20 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh, US Patent 6157408 as applied to claims 1, 12 and 18 above and further in view of Tanaka, US Patent 6674470 B1.

Re claims 6, 8, 14, 16, 20 and 22, Etoh discloses substantially the same as recited in claims 1, 12 and 18, but does not disclose that each electric signal recorder is a MOS type electric signal recorder.

However, Tanaka teaches a MOS-type solid state imaging device (Fig. 7: 30-1-1) comprising an amplification transistor (Fig. 7: 94) for amplifying the charge signal transferred from the photodiodes (Fig. 7: 92a and 92b) to be stored by the clamp capacitors (Fig. 3: 56-1 and 56-2). (Col. 7, lines 32-55 and col. 8, lines 6-16).

Therefore taking the combined teaching of Etoh in view of Tanaka, it would have been obvious to modify the high speed imaging sensor in Etoh by interchanging the signal converters with a MOS-type solid state imaging device having an amplifying transistor for amplify the signal collected by the photodiodes to transfer said signal to storages capacitors. Doing so would help the high speed image sensor to have lower

power dissipation and smaller system size at the expense of image quality and flexibility.

7. Claims 17 and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Etoh, US Patent 6157408 in view of applicant's admitted prior art (fig. 24).

Re claims 17 and 23, Etoh does not disclose that the high-speed sensor comprises a cuttable band-shaped space, which continuously extends from one side to another side of the light receptive area.

However, Fig. 24 of applicant admitted prior art teaches a sensor comprising a cuttable band-shaped space extending from one side to another side of the light receptive area.

Therefore taking the combined teaching of Etoh in view of the applicant's admitted prior art, it would have been obvious to modify the receptive in Etoh with a cuttable band-shaped space, which continuously extends from one side to another side of the light receptive area as taught by the applicant's admitted prior art. Doing so would help allowing more space in the light receptive area for increasing the size or changing the shape of the photodiode.

#### **Contact**

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson D. Hernandez whose telephone number is (703) 305-8717. The examiner can normally be reached on 8:30 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R. Garber can be reached on (703) 305-4929. The fax phone

number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Nelson D. Hernandez  
Examiner  
Art Unit 2612

NDHH

  
YULE  
PRIMARY EXAMINER